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MANGANESE SOURCES IN CHINA

A. Kiangsu Province (1940)

1. Tung-hai Hsien -- Ch'in-p'ing-shan

a. The pure manganese content of hard and soft manganese ores found in this area is about 24 percent while that of the wad manganese is about 22 percent.

b. The deposit is residual, about one meter thick and found alternately between mica schist and apatite. The apatite layer is 3-4 meters thick, and adjacent to it is a rich phosphorite ore deposit.

c. This mine is being operated by the Chia P'ing Company.

2. Chou-chiang Hsien -- Hsiang-shan

This mining area is located about 3.5 kilometers from Kao-tzu (119 19 32 11).

B. Chekiang Province (1940)

1. Hang Hsien -- Sha-mi-wu-shan and An-chi-wan

a. These two mining areas are located at the border of Yu-hang Hsien near Yu-mei-k'eng (Lung-men-ssu).

b. The pure manganese content of psilomelane found in these areas is between 42-59 percent.

c. Psilomelane deposits are found between quartz and sandstone crevices. Some manganese-containing ores are also found near the surface.

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2. Yu-hang Hsien -- Li-t'ang-wu, Sun-chia-k'eng, Mu-chia-shan, Tung-chung-shan and Tung-wu-shan

a. These mining areas are located at Nan-hsiang, Nan-chien-shang-ts'un.

b. The pure manganese content is about 24-37 percent.

3. Yu-hang Hsien -- Hsien-lin-fou

a. This mining area is located 10 kilometers southeast of Yu-hang (119 57 30 18) at Yung-p'an-shan near Hsien-lin-fou and Sheng-t'ang-ling.

b. Jacobsite, containing 37.6 percent pure manganese, is found in thin layers or scattered small deposits in the sandstone.

4. Yu-hang Hsien -- Ch'ien-ni-wu

a. This mining area is located southwest of Wu-chao-shan.

b. Psilomelane is found in quartz.

5. Ch'ang-hua Hsien -- Chu-liu-chen

a. This mine is located at K'ung-ku-shan which is about 30 kilometers west of Ch'ang-hua (119 14 30 11) and 1.3 kilometers south of Chu-liu-chen.

b. For the most part, psilomelane constitutes the main ore deposit although some soft manganese-containing ores are found. Psilomelane and limonite paragenesis are found in calcite veins which average about one meter thick. These calcite veins are located in the limestone strata.

c. Ores are now being extracted from this mine.

6. Ch'ang-hua Hsien -- Ni-ch'iu-lung

a. This mine is located near Ho-yang-chuang and P'eng-wu which are about 23 kilometers west of Ch'ang-hua and 3.3 kilometers south of Chu-liu-chen.

b. A lens-shaped alabandite deposit containing 49.7 percent pure manganese is found along the 0.3-meter thick quartz vein in the limestone. The deposit is hydatogenetic.

7. Chu-chi Hsien -- Shih-ma-wu

a. This mining area is located 20 kilometers north of Chu-chi (120 13 99 44) and 11 kilometers west of Yao-kung-fou.

b. Deposits containing 60 percent pure soft manganese are found in the yellow sandstone which is located below rhyolite deposits. The average thickness of the deposits is about one meter, the width becoming smaller with increasing depth.

8. Chu-chi Hsien -- Ts'un-shang, Chin-huang-shan, Lung-shan and Hsiang-lu-shan

a. These mining areas are located near Chiu-tu and Wang-chia-wu which are about 18.5 kilometers from Chu-chi.

b. Deposits containing soft manganese ore of 50 percent purity and wad manganese of 30 percent purity are found in the shale as well as between limestone and shale deposits.

9. I-wu Hsien -- Wu-ta-yuan-ts'un

a. This mine is located several kilometers southeast of I-wu (120 03 29 18).

b. Soft manganese-containing ore is found in large massive rock formations among scarlet-colored shale.

c. At present the mine is not in operation.

10. I-wu Hsien -- Chin-kang-ling

a. This mining area is located at Nan-hsiang.

b. A hydatogenetic deposit containing 46 percent pure manganese is found in rhyolite. The width of the deposit is about 10 centimeters.

11. Lo-ch'ing Hsien -- Nan-shan

a. Nan-shan is located at Hsi-hsiang T'an-t'ou-ts'un.

b. Hydatogenetic deposits containing psilomelane, galena, zinc ore, and pyrite are found among coarse agglomerates. The maximum width of the deposits reaches 5 meters.

c. The transportation is considered very good. The mine is now being operated by primitive methods.

12. Lo-ch'ing Hsien -- Wu-lung-shan

a. This mining area is located about 23 kilometers from Lo-ch'ing (120 57 28 08) near Ch'i-chiang-hsiang and Ti-t'ou.

b. A hydatogenetic deposit containing psilomelane is found among the granites.

13. T'ai-shun Hsien -- Yin-ch'ang-k'ou

a. This mine is located some 165 kilometers from T'ai-shun (119 43 27 33).

b. A hydatogenetic deposit containing psilomelane is found in quartz vein which is located in gneissoid-granite. The width of the deposit is about 0.5 meter.

14. P'ing-yang Hsien -- Yang-pan-ling

a. This mining area is located 95.7 kilometers from P'ing-yang (120 33 27 42) between Chu-chi and Ch'ing-chieh.

b. Soft manganese-containing ores are found near the ground surface.

15. Ning-hai Hsien -- Ch'ien-huang-shan

a. This mine is located at the foot of the mountain behind Ch'ien-huang-shan some 5 kilometers northwest of Ning-hai (121 25 29 18).

b. A large deposit of soft manganese-containing ore is found near the ground surface.

C. Honan Province (19[illegible])

1. I-yang Hsien -- Lung-wang-kou

a. This mine is located about 8 kilometers directly south of I-yang

(112 09 34 37) between Lung-wang-miao and Wang-[illegible]-shan.

b. A large deposit of soft manganese-containing ore, 38.87 percent, is found in the ash-colored clay strata.

D. Kiangsi Province (1940)

1. Lo-p'ing Hsien -- Ta-t'ieh-shan-feng and Hsiao-t'ieh-shan-feng

a. Ta-t'ieh-shan-feng is located 33 kilometers south of Lo-p'ing (117 07 28 58) and about 2 kilometers south of Chung-fou-chieh.

b. Hard and soft manganese ores contain 51.5 percent pure manganese while the wad manganese contains atween 20-30 percent. The reserves of hard and soft manganese ores are estimated at about 670,900 tons while those of wad manganese are placed at 342,500 tons.

c. The deposits are either secondary sedimentation or residual. Schistose rock and crevice deposits are found widely scattered in this area. The very thin irregular deposits reach a thickness of about one meter. A large number of quartz veins containing manganese ore are found near these deposits. In addition valuable effloresced residual deposits are found at Ta-t'ieh-shan-feng and Hsiao-t'ieh-shan-feng. The manganese-bearing veins of these residual deposits are some 10 meters thick at Ta-t'ieh-shan-feng and 5-6 meters at Hsiao-t'ieh-shan-feng.

d. The annual output of ore in the past amounted to about 25,000 tons.

2. Lo-p'ing Hsien -- Kou-hsing-shan, Tung-ch'ang-wu, Shih-tzu-shan, Teng-kuo-chien, Ho-se-hsing, Ta-chin-ch'ai-hsing, Chin-k'eng-wu and Shang-yuan-wu

a. Secondary sedimentary deposits containing psilomelane are found in crevices and in the schistose rocks. Manganese ores are also found near quartz veins.

3. Lo-p'ing Hsien -- Wang-chia-shan, Ta-yang-shan and Kuo-tsao

/No further data./

E. Hupeh Province (1940)

1. Ta-yeh Hsien -- Pai-yang-lin

a. This mine is located southeast of T'ieh-shan-p'u which is situated west of T'ieh-shan-p'u.

b. A manganese and limonite deposit containing 32 percent iron and 5.6 percent manganese is found in limestone. The deposit is very narrow, extending some 1,200 meters. The mine is not considered very valuable.

2. Yang-hsin Hsien -- Yin-shan

a. It is located 8 kilometers north of Yang-hsin (115 09 29 51).

b. Secondary sedimentation jacobsite containing 18 percent pure manganese is found in the fissures of the hematite deposit, the form of the ore being irregular or almond shaped. Galena is also found in this area.

F. Hunan Province (1940)

1. Yo-yang Hsien -- Pa-chiao-ling

a. This mine is located 40 kilometers southeast of Yo-yang (113 12 29 28) and 3 kilometers west of Ch'ing-kang Station which is near Ta-yuan-ch'ung and Hsiao-yuan-ch'ung.

b. Psilomelane constitutes the main ore deposit although some soft manganese ores can be found. Ore reserves are estimated at about 1,241,820 tons, while the outcropped deposits are estimated at 138,600 tons. Secondary enrichment and residual deposits containing about 15.4 to 33.5 percent pure manganese are found in alternate strata of sandstone shale. One section of the area at both Ta-yuan-ch'ung and Hsiao-yuan-ch'ung contains outcropped deposits. The manganese ore is found along the hillside covering an area of about 2 kilometers in length, the thickness of the veins reaching about 4 meters. The richest manganese ore is found, however, in veins of about 1.5 meter thickness.

c. The mine is located about 3 kilometers from a road. Water transport can be utilized throughout the year for transporting the extracted ores.

2. Ch'ang-sha Hsien -- Jen-hsing-shan

[No further data.]

3. Hsiang-t'an Hsien -- Shang-wu-tu

a. This mine is located 20 kilometers north-northeast of Hsiang-t'ang (112 51 27 54) and about 40 kilometers southwest of Ch'ang-sha (112 59 28 12).

b. Most of the ore found in this area is psilomelane although some soft manganese ores and wad manganese can be found. The bedded and secondary enrichment deposits contain: Mn, 42-51 percent; SiO_2, 5.5-22.8 percent. The deposits are found beneath sandstone strata, the thickness reaching 1-3 meters. Some 20-30 meters below the deposits are black carbonaceous shales containing granulated and lattice structured psilomelane. In addition, some oval-shaped manganese ores are located in the 30-40 meter thick sandy shale deposits but their value is negligible. Manganese veins 3-4 meters thick can be found in the fragmentary flint layers.

c. The area where deposits are found extends east to San-chiao-shan, west to Shih-ch'ung, south to Mao-t'ang, and north to Hsiao-chia-wan, and is divided as follows:

District	Reserves (tons)
Hua-ch'i-ling	18,000
T'ieh-t'ang	12,000
Yang-t'ien-hu	84,000
Hu-chia-wei	960,000
Ch'i-p'o-chan and Hsiao-chia-shan	720,000
Mien-yang-shan and Shih-ch'ung-ling	1,575,000

d. This mine is located 3 kilometers from a light railroad line and is about 6 kilometers from a road. It once produced 65 percent of China's manganese output, the annual production being about 10,000 tons of ore.

4. Hsiang-t'an Hsien -- Chiu-t'an-ch'ung

a. This mine is located 60 kilometers southwest of Hsiang-t'an near the

border of Hsiang-hsiang Hsien.

b. The bedded and secondary enrichment deposits contain shale and sandstone layers, soft manganese ore being found in the shale and psilomelane in the sandstone. The deposits along the eastern hillside are about 0.6 meters thick. Wad manganese is found, for the most part, in the southwestern area of Chiu-t'an-ch'ung.

c. Although the operation of this mine was suspended in 1932, it once produced between 100-250 tons of powdered manganese [per year?]. One of the major difficulties lies in the fact that the extracted ore must be transported some 26 kilometers by land to the point where the ore may be loaded on boats.

d. The reserves are located in the following areas; the manganese content at Ta-fo-p'ai is analyzed at almost 100 percent:

Ta-fo-p'ai (eastern hillside)	8,640 tons
Chiu-t'an-ch'ung (western area)	8,280 tons
Hsia-lung-an-ch'ung	3,600 tons
Pai-yuan-an-ch'ung	1,350 tons

e. The analysis of the ore, except that of Ta-fo-p'ai, is as follows: Manganese 45.1-50 percent; SiO_2, 12.8-16.7 percent.

5. Hsiang-t'an Hsien -- Hsien-mu-shan, Pai-ch'uan-hsieh and Chia-shan

a. Located near Shang-wu-tu.

b. Reserves are estimated at about 800,000 tons.

6. Hsiang-t'an Hsien -- Ta-jen-t'o, Pai-yun-an and Lung-wang-shan

a. These mining areas are located near Shih-i-wu.

b. Transportation is very good.

7. Hsiang-t'an Hsien -- Su-chia-lung

This area is located near Shih-ch'i-wu.

8. Li-ling Hsien -- Huang-t'u-yao

[No further data.]

9. Yu Hsien -- Shang-wu-t'u-p'o-ch'ung

[No further data.]

10. An-jen Hsien -- North suburb of An-jen

a. The mining areas are located near Shih-hui-yao and Liang-shui-ch'ung some 3-5 kilometers from the city of An-jen (112 12 26 45).

b. The bedded deposit is found along the inclined ridge among the sandstone and shale, the ore in zonal, netted or spherical forms. Oval-shaped manganese ore is also found widely scattered in the red clay soil. The manganese content at Shih-hui-yao is about 40.8 percent while that of Liang-shui-ch'ung is 26.2 percent.

c. The operation of the mine was suspended in 1919 but in view of the abundant ore reserves of this area, reopening of the mine may prove very fruitful.

11. An-jen Hsien -- Ta-yo-ling

This mining area, located north of An-jen, contains two mines; namely, Ta-yo-ling and Wu-tang-men.

12. An-jen Hsien -- Chu-shan-p'o

This mining area is located north of An-jen and divided into three districts as follows: Ch'ang-ko-ts'un, Chu-shan-p'o and Shih-hui yao.

13. Heng-shan Hsien -- Tai-chia-t'o and Su-chia-p'ai

This mining area is located in the district of Hai-tzu-shih.

14. Heng-shan Hsien -- T'ieh-k'uang-ch'ung

An outcropped deposit containing valuable manganese ore can be found in this area.

15. Heng-yang Hsien -- Li-chiang-p'u

Ore deposits are found in shale and sandstone layers.

16. Heng-yang Hsien -- Chen-nan-ling, Ch'en-chi-chen

/No further data./

17. Heng-yang Hsien -- Ting-chia-shan, Ch'uan-chia-chen

/No further data./

18. Heng-yang Hsien -- Ch'i-li-shan

The ore of this area is jacobsite.

19. Lei-yang Hsien -- Wu-ch'ien-p'u and Kung-p'ing-hsu

These mining areas are located south of Lei-yang (112 50 26 26).

20. Lei-yang Hsien -- Tung-hu

a. This mine is located northeast of Lei-yang.

b. The ore found is generally jacobsite.

21. Lei-yang Hsien -- Eastern bank of Ch'un Shui

a. The Ch'un Shui forms a boundary between Lei-yang and Ch'ang-ning Hsiens. The area in which the manganese ore is found is along the eastern bank of Ch'un Shui. Starting from a point about 2 kilometers north of Pai-shui, it extends some 40 kilometers to an area on the bank of Ch'un Shui opposite Yen-shan (112 39 26 32).

b. Ore found in this area is usually jacobsite containing about 30 percent pure manganese. The manganese content of the ore at K'u-chu-t'an is said to be about 26.8 percent.

c. The deposit is of secondary enrichment, the manganese-bearing strata being found in siliceous shale or sandstone, its thickness averaging about 1.5 meters. The ore is found in botryoidal, kidney or shell-shaped forms; and that in siliceous shale, in lattice formations. In addition, crushed ore clusters in

red surface soil containing manganese are found widely scattered in the Mei-mu-hsing area.

d. The following table shows where mines are located and their reserves:

Mei-mu-hsing and Chi-tzu-ling	59,400 tons
Tu-chia-shan	27,000 tons
K'u-chu-t'an	21,600 tons
Kuo-tzu-ao and Hsin-wu-hsiao-chia	35,100 tons
Tung-chia-k'ou	17,550 tons

e. These mines together with those on the western bank of Ch'un Shui are being operated by the Han Yeh P'ing Company. Four mining offices were established at the following points, there greatest annual output being between 5,000-6,000 tons of ore: (1) Pei-men; (2) Yang-t'ien (112 39 26 25); (3) Yang-ko-chou; and (4) Pai-fang (112 26 26 35).

22. Ch'ang-ning Hsien -- Western bank of Ch'un Shui

a. The ores are for the most part psilomelane although some soft manganese-containing ores are found. The manganese content at Mai-tzu-yuan is 29.4 percent while that of Wu-li-ch'ung is 19.4 percent.

b. The geological data of the deposits along the western bank of Ch'un Shui are similar to those of the eastern bank.

c. The mining areas and reserves of the western bank of Ch'un Shui are as follows:

Mai-tzu-yuan and Ling-chi	31,250 tons
Ch'uan-t'ang-ni and Yin-t'ieh-hsu	6,750 tons
T'ang-chia	4,050 tons
Yen-chou	12,150 tons
Wu-li-ch'ung	18,900 tons

23. Ch'en Hsien -- Pai-yun-hsien

a. The mine is located about 20 kilometers north-northeast of Ch'en (112 59 25 18).

b. The manganese ore deposit is found in the sandstone which is located below the Permian carboniferous strata.

24. Ch'en Hsien -- Hsiu-chia-li and Ma-nao-shan

[No further data.]

25. Ch'en Hsien -- Chin-ch'uan-t'ang

a. The mine is located 30 kilometers southeast of Ch'en near Chin-ch'uan-t'ang at Ma-nao-shan.

b. The ores generally contain hard and soft manganese although some wad manganese may be found. The deposit is hydatogenetic and found at a depth of about 7 meters.

26. Ch'en-Hsien -- Ta-p'u-ch'iu and Lao-t'ung-tzu-shan

These mining areas are located near Hsi-feng-hsiang.

27. Kuei-yang Hsien -- P'ai-chia-t'ang and Hu-chia-t'ang

[No further data.]

28. Tao Hsien -- Pei-hsiang

A manganese deposit containing 80.5 percent manganese dioxide is located in an area 13 kilometers long at a depth of about 30 meters; the width of the ore vein is about 1.8-2.1 meters.

29. I-yang Hsien -- Cha-fou-chen and Wang-chia-ch'ung

[No further data.]

30. I-yang Hsien -- Mao-ya-t'ang

a. This mining area is located 16 kilometers south of Ma-chi-t'ang.

b. The deposit is bedded, containing 36.6 percent pure manganese in a vein 0.3 meter thick.

31. An-hua Hsien -- Kuei-hua-chen and Liao-tao-shan

[No further data.]

32. Shao-yang Hsien -- Sung-tzu-t'ang

The ores are generally manganites.

33. Shao-yang Hsien -- Hsien-ch'a-chen and Yu-t'ai-ling

[No further data.]

34. Shao-yang Hsien -- Hu-chia-p'u

The ores are generally manganites.

G. Fukien Province (1941)

1. P'u-t'ien Hsien -- K'eng-ping-k'eng and Chin-p'ang-ling

a. These mining areas are located between 40 to 42 kilometers north of P'u-t'ien (119 03 25 29); about 3 kilometers west of Kuang-yeh-li and Lien-hua-ts'un; and between 2 to 3 kilometers southwest of Yin-k'eng-ts'un.

b. The manganese is found in either hard or soft manganese-containing ores or wad manganese although some reddish limonite is also found in this area containing an excellent grade of manganese.

c. The deposit at K'en-ping-k'eng is found along the siliceous gneiss in pockets, the inclination of the deposit being between 70 to 75 degrees. The width of the deposit ranges from 3.6 to 9 meters. The ore at Chin-p'ang-ling is found in clumps 0.25-0.3 meter in diameter in the efflorescod clay.

d. The ore reserves of these areas are regarded as excellent.

2. Hsien-yu Hsien -- Ho-shan

[No further data.]

3. An-ch'i Hsien -- Mountain located behind Chen-ti-tsu-ta'o

Aside from manganese ores, lead veins of 0.4 meter in width can be found in this area.

4. An-ch'i-Hsien -- Pei-shih-shan

a. This mining area is located at the southwest corner of An-ch'i Hsien.

b. The reserves are estimated to be very small.

5. An-ch'i Hsien -- Vicinity of An-ch'i (117 35 26 26)

The ore is residual, containing about 40 percent psilomelane and found widely distributed among the red clay. The length of the area extends about 3-4 kilometers.

6. Ch'ing-liu Hsien -- Li-chia

a. This mining area is located 70 kilometers south of Ch'ing-liu (116 50 26 11) and about 17 kilometers from Lien-ch'eng Hsien.

b. Residual and quicksand deposits containing cobalt manganese ores are found in effloresced rock formations in mountain valleys.

7. Lien-ch'eng Hsien -- Hung-t'u-kang

a. This mining area is located 3 kilometers west of Lien-ch'eng (116 44 25 43).

b. Residual and quicksand deposits containing cobalt manganese ores are found in effloresced rock formations in mountain valleys.

H. Kwangtung Province (1941)

1. Chiao-ling Hsien -- Yang-Tzu-shan

a. This mining area is located about 33 kilometers west of Chiao-ling (116 10 24 42).

b. Residual deposits containing jacobsite, limonite and manganite are widely distributed around Ch'ien-k'uang-ch'ang.

2. Mei Hsien -- Ch'en-shan-kang.

[No further data.]

3. Hui-lai Hsien -- Sha-tung-pao-shan

[No further data.]

4. Hui-yang Hsien -- Ch'iao-tzu-t'ou

[No further data.]

5. Hui-yang Hsien -- Peng-shan-niu and Tung-wei

[No further data.]

6. Pao-an Hsien -- Ta-nan-k'eng (Ta-lan-k'eng)

a. This mining area is located about 8 kilometers north of K'uei-ch'ung-hsu.

b. A large amount of manganese-containing ore and outcropped iron ore is found in this area. Igneous rock is found in the northeast area and limestone in the northwest area. The manganese ore layer, about 1.5 meters deep, is found above the limestone strata.

7. Lung-men Hsien -- Sha-ching-hsu Lan-k'eng

a. This area is located about 5 kilometers northeast of Sha-ching-hsu.

b. The manganese ore is mainly jacobsite found in residual deposits. Irregular sized manganese ore clusters are found widely distributed above the sandstone layer.

8. Lung-men Hsien -- Ch'ih-chu-kang

a. This mining area is located northeast of Lung-men (114 04 23 46).

b. The residual deposit containing jacobsite constitutes the main source of manganese ore. In addition, manganese ore clusters are found above the ash-colored sandstone layer.

9. T'ai-shan Hsien -- Teng-shan

[No further data.]

10. Feng-ch'uan Hsien -- Feng-ch'uan (111 30 23 25)

Manganese ore is mainly jacobsite found among the hematite ores, the content being: Mn, 30 percent; P, 0.4-0.5 percent.

11. Lo-ting Hsien -- Hsin-yung-hsiang

a. This mine is located behind Ta-t'ang Shan and Tsao-shui-t'ien 26 kilometers south of Lo-ting (111 28 22 41). There are deposits also at I-hsu-liao-ting, Kuang-t'ou-ting and Pai-yer-ting.

b. The ore is, for the most part, jacobsite of undetermined reserves found in pockets above the siliceous limestone. The content of the ore is only 30 percent manganese, the remainder being iron.

12. Lo-ting Hsien -- Huang-tan-ling

a. This mining area is located 20 kilometers southwest of Lo-ting.

b. The deposit containing jacobsite is found in the laterite although the area is said to be very small.

13. Mao-ming Hsien -- Feng-chi-ling

a. This mining area is located about 3 kilometers northwest of Mao-ming (110 53 21.45).

b. The ores are found in pyrite but the manganese content is reported to be very small. A large amount of outcropped ore is found in this area.

14. Hua Hsien -- Keng-k'ou

a. This mining area is located about 26 kilometers northwest of Hua (110 39 21 31) and about 6 kilometers west of Kuan-ch'iao-hsu.

b. Residual deposits containing about 30 percent pure manganese are found widely distributed in this area. The ore is found in the clay above the limestone, the thickness of the veins reaching about 5 meters. The area of the deposits is about 1,000 meters long and 600 meters wide.

c. Primitive methods of extraction are being employed by the local inhabitants and their daily output only amounts to about one ton. Since the mine is located in a low area, drainage is a major problem.

15. Hua Hsien -- Ta-tun-p'u

a. This mining area is located 40 kilometers northwest of Hua near Feng-ts'un.

b. The ore deposit is residual containing porous jacobsite. Irregular sized jacobsite clusters are in the laterite which is above the limestone.

16. Lien-chiang Hsien -- Niu-hsu-tzu

a. This mining area is located directly south of Lien-chiang (110 16 21 36) near the Sui-ch'i border.

b. The deposit is hydatogenetic containing psilomelane. Quartz veins containing manganese ore are found widely scattered among the phyllite shale and clay slate; the thickness of some of the veins reaches five meters. Outcropped deposits are also found.

17. Ling-shan Hsien -- Pai-fen-p'ing

a. This mine is located about 56 kilometers northeast of Ling-shan (109 14 22 24) and 3 kilometers south of Pai-t'ang-hsu near Pai-fen-p'ing and Lei-pi-ling.

b. The deposit is hydatogenetic containing poor grade jacobsite. It is found among the ash-colored sandy shale. Some granite is also found in this area.

18. Ho-p'u Hsien -- Chu-niu-shan

a. This mining area is located about 130 kilometers northeast of Ho-p'u (109 10 21 38); 20 miles southwest of Hsing-yeh (109 56 22 46), Kwangsi; and 5 miles east of Ch'eng-huang-hsu.

b. The deposits are both hydatogenetic and residual containing hard and soft manganese ores, limonite and some wad manganese. The soil structure of this area is mainly sandstone and shale although some granite and quartz-porphyries can be found in the northeast area. The ores are found in three different forms as follows: (1) those in large kidney-shaped formation, about one meter thick; (2) crushed manganese ore in jacobsite layer, extending 500 meters in length and 100 meters in depth, the thickest part of the layer being 20 meters; (3) ore clusters found in irregular forms in red clay, mainly in the area northwest of Chai-hsu.

c. Little extraction has been done to date; the daily output of the village inhabitants is about 6-10 tons.

19. Ho-p'u Hsien -- Pai-shih-ts'un

a. This mining area is located 10 kilometers northwest of Chai-hsu.

b. Outcropped quartz veins, containing shamm reserves of jacobsite, can be found in effloresced granite. The width of the veins reaches about 0.5 meter.

20. Ch'in Hsien -- K'ung-tung-ling and Ch'ang-kang-ling

a. These mining areas are located 13 kilometers north of Huang-wu-t'ung, 4 kilometers east of Ma-piao-ts'un, and about 40 kilometers northwest of Ch'in (108 37 21 58).

b. The ores of these areas are mainly psilomelane found in hydatogenetic and residual deposits although some wad manganese, manganite, limonite and soft manganese ore are also found. An intrusive granite formation containing an excellent grade of manganese ore is located northeast of K'ung-tung-ling, and rhyolite is found in the northwest area. Manganese ore is found in the sandy shale in some areas, the thickness of the ore veins ranging from 10-25 centimeters. Generally, the thickness varies with the depth, the deeper the ore deposit the thicker the vein. Wad manganese is found in clay soil, the thickest veins being about one meter.

c. The operation of these mines has been suspended periodically. In the K'ung-tung-ling area, the ore is extracted largely from the clay, and from the ore veins in the granite at the Ch'ang-kang-ling area. Annual ore production of these areas reached about 10,000 tons in the past.

21. Ch'in Hsien -- Shang-lung-ling

a. This mining area is located 13 kilometers north of Huang-wu-t'un and southwest of K'ung-tung-ling.

b. Manganese ore of 43.1 percent purity are found in hydatogenetic and packed deposits containing limestone, quartz, sandstone and breccia layers. The thickness of some of these layers is 52 meters. The manganese ore is found in apertures.

22. Ch'in Hsien -- Tiao-yu-kung and Pai-kou-t'ang

a. These mines are located about 6 kilometers west of Shang-ching-hsu and about 3 kilometers south of Tiao-yu-kung.

b. Hydatogenetic and residual deposits containing 33.10 percent pure manganese are found along the hard rock formation along Lien-hua-shan. The inclination of the deposits is about 55 degree. Some secondary wad-containing manganese ores can be found in the clay located near the surface of the ground.

23. Ch'in Hsien -- Ma-pai-t'uan

[No further data.]

24. Ch'in Hsien -- Ko-feng-t'uan

[No further data.]

25. Ch'in Hsien -- Ta-tung-t'uan

[No further data.]

26. Ch'in Hsien -- Yen-sha-ling

[No further data.]

27. Ch'in Hsien -- Ts'ai-ying area

This mining area is located near the border of Ch'in and Fang-ch'eng Hsiens.

I. Hai-nan Tao (1941)

Ch'iung-tung Hsien -- Shih-kua-ling

[No further data.]

J. Kwangsi Province (1941)

1. Wu-hsuan Hsien -- San-li-hsu

a. This mining area is located at Ma-wan-ts'un, Wu-kuan-ling, Lao-hu-shan and Ta-k'en-shan some 13 kilometers southeast of Wu-hsuan (109 38 23 36) and 3 kilometers east of San-li-hsu.

b. The deposit is residual, containing psilomelane, jacobsite and laterite. The manganese content of the psilomelane is said to be about 53.91 percent, while the laterite contains about 3 percent pure manganese. Jacobsite is found in the laterite, the diameter of the ore veins reaching about 0.5 meters. The laterite is located in an area extending 4 kilometers long and 2.5 kilometers wide, the thickness reaching about 5 meters. The total reserves of this area are estimated at about 6 million tons, the reserves at Ma-wan-ts'un are estimated at 30,000 tons, and those at Wu-kuan-ling, about 13,000 tons.

c. Of the eight companies which were operating in this area, only two are now in existence. Mining operations are possible only during the months of October through March. The present daily output is about 270 tons of ore, the annual production being between 25,000-30,000 tons.

2. Wu-hsuan Hsien -- Lung-ch'a-shan and T'ieh-ming-shan

a. These mining areas are located near the border of Kuei-p'ing Hsien.

b. The reserves are estimated at about 300,000 tons.

3. Ts'en-ch'i Hsien -- Ma-an-shan

a. This mining area is located 2-3 kilometers northeast of Ts'en-ch'i (110 56 22 57).

b. Small ore veins containing psilomelane can be found in the quartz.

4. Kuei-p'ing Hsien -- Fang-huang-ling

a. This mining area is located 17 kilometers west of Kuei-p'ing (110 05 23 24) and 20 kilometers north of Kuan-ch'iao-hsu.

b. The ore is psilomelane of good quality found in five or six localities where mining is being carried out.

5. Kuei-p'ing Hsien -- Hsin-ts'un-ling

a. This mining area is located 27 kilometers west-southwest of Kuei-p'ing and about 15 kilometers northwest of Kuan-ch'iao-hsu.

b. The deposit is residual containing jacobsite. The deposit is estimated to be very small.

6. Kuei-p'ing Hsien -- Kao-sha-chen (Kao-sha-t'ang)

The annual output of ore from this mine is said to be about 4,000 tons.

7. Kuei-p'ing Hsien -- Ta-kuei-fou and Ta-ch'ung-ling

a. These mining areas are located 2 kilometers from Hsun-chiang.

b. The deposit is estimated to be about 20,000 tons containing psilomelane of 49 percent pure manganese. The annual output of ore from these areas is about 4,000 tons.

8. Kuei-p'ing Hsien -- T'an-t'ang-hsu

The annual output of ore from this mine is about 2,500 tons.

9. Kuei-p'ing Hsien -- Szu-ming-shan

The annual output of ore from this mine is about 3,500 tons.

10. Kuei-p'ing Hsien -- Chi-hsia-shan

The annual output of ore from this mine is about 1,500 tons.

11. Kuei-p'ing Hsien -- Hsiao-hsun-ts'un and Ta-she-ling

The annual output of ore from this mine is about 4,500 tons.

12. Kuei-p'ing Hsien -- Ta-hsun-t'ing-ts'un

[No further data.]

13. Kuei-p'ing Hsien -- Ch'uan-t'ou-ling and Yueh-liang-ling

[No further data.]

14. Kuei-p'ing Hsien -- Pi-t'an

The deposits found in this area are generally soft manganese-containing ore.

15. Kuei-p'ing Hsien -- Lung-t'ang-ts'un

a. This mining area is located between Lung-t'ang-ts'un and Ta-hsun-teng-ts'un and 2 kilometers from Lung-t'ang.

b. The deposit is residual containing both hard and soft manganese ores. The ore veins range from one inch to 5 meters in thickness.

16. Kuei-p'ing Hsien -- Lu-ch'ung

[No further data.]

17. Kuei-p'ing Hsien -- P'ing-t'ang-ts'un

[No further data.]

18. Kuei-p'ing Hsien -- Mu-lo-ts'un

[No further data.]

19. Lu-ch'uan Hsien -- Ta-niu-shan

a. This mining area is located about 9 kilometers north-northwest of Lu-ch'uan (110 17 22 23) and 3 kilometers west of Mi-ch'ang-hsu.

b. The deposit is hydatogenetic containing hard and soft manganese ores as well as limonite. Irregular-sized ore veins can be found in the anticline shale, the ore being found in clustered form. Generally, the greatest amount of ore is located at the axial plane of the anticlinal layer.

20. Lu-ch'uan Hsien -- Liu-feng-chai

a. This mine is located about 20 kilometers south-southwest of Lu-ch'uan and about 3 kilometers west of Mi-ch'ang-hsu.

b. The deposit is hydatogenetic containing psilomelane and limonite.

c. The mine is now in operation.

21. Lu-ch'uan Hsien -- Hsieh-lu-chai

a. This mine is located about 20 kilometers south-southwest of Lu-ch'uan and northwest of T'an-hsi-hsu.

b. The deposit is hydatogenetic containing jacobsite.

c. The mine is now being operated.

22. Po-pai Hsien -- Ling-chiao-chia

a. This mine is located about 49 kilometers southwest of Po-pai (110 02 22 18) in the mountains southwest of Ling-chiao-chai.

b. The deposit is both residual and hydatogenetic containing poor grade jacobsite which is found in the effloresced shale near the ground surface.

23. Liu-ch'eng Hsien -- Fen-men-ao, Liu-meng-k'ou and Kao-ch'iao

The annual output of these three mines totals about 3,900 tons.

24. Lai-pin Hsien -- Erh-li-t'un, She-ts'un and Liu-ch'iung-shan

The annual output of ore from Liu-ch'iung-shan is about 800 tons.

25. Lai-pin Hsien -- Tung-ku-ling

The annual output of ore from this mine is about 1,200 tons.

26. Lai-pin Hsien -- Kao-ch'iao-ling

The annual output of ore from this mine is about 1,500 tons.

27. Lai-pin Hsien -- Shai-ku-ling and Niu-lan-ling

The annual output of manganese ore from these two mines is about 2,400 tons.

28. Lai-pin Hsien -- Hsieh-ts'un

[No further data.]

29. Lai-pin Hsien -- Ta-wan-tzu

a. This mine is located about 25 kilometers from Shih-ling near Liu-chiang and 60 kilometers from Ch'ien-chiang which is near Hung-shui Ho.

b. The annual output of ore from this mine is about 4,000-5,000 tons.

30. Heng Hsien -- Hsiao-lu

a. This mining area is located near the southeast boundary of Heng Hsien some 6 kilometers south of Pai-ho-hsu which is situated about 19 kilometers east of Heng (109 20 22 38).

b. The deposit is of secondary enrichment containing psilomelane and iron ores, the content being, Fe, 52-54.2 percent; Mn, 25.15-30 percent. Ore clusters are found in the laterite deposits. Large clusters weigh several tons; the small clusters are no larger than pebbles.

31. Heng Hsien -- Ma-po-ch'iao

a. This mining area is located 13 kilometers southeast of Heng.

b. A secondary enrichment deposit containing jacobsite constitutes the source of manganese in this area. It is believed that there are comparatively large reserves in this area.

32. Lei-p'ing Hsien -- Lan-hsu area

The deposit, possibly Devonian era, containing psilomelane is found in limestone. In addition, efflorescsed deposits containing manganese ore are found widely distributed in this area.

K. Szechuan Province (1942)

Feng-tu Hsien -- Man-hsiang

a. Soft manganese ore of good quality is found below the quartz layer.

b. The reserves are estimated to be about 100,000 tons.

L. Kweichow Province (1942)

1. Hsing-i Hsien -- Feng-tang

[No further data.]

2. Hsing-i Hsien -- Lao-t'ang-fang

[No further data.]

M. Yunnan Province (1942)

1. Hui-tse Hsien -- Ho-hsin-ti

[No further data.]

2. Hui-tse Hsien -- Huo-hung

[No further data.]

3. Hui-tse Hsien -- Ma-shu-ch'ang

   [No further data.]

4. Hui-tse Hsien -- Ch'a-hua-ching

   [No further data.]

5. Hui-tse Hsien -- Huang-pei-p'ing

   [No further data.]

6. Hui-tse Hsien -- P'ing-wu-ch'ang

   [No further data.]

7. Hui-tse Hsien -- Kuang-t'ou-p'o

   [No further data.]

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